The Commonwealth of Massachusetts

DEPARTMENT OF
TELECOMMUNICATIONS AND ENERGY

BAY STATE GAS COMPANY
D.T.E. 05-27

FIFTEENTH SET OF INFORMATION REQUESTS OF THE DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY TO
THE COMPANY

Pursuant to 220 C.M.R. § 1.06(6)(c), the Department of Telecommunications and Energy ("Department") submits to Bay State Gas Company ("Bay State" or "Company") the following set of Information Requests for response within SIX CALENDAR days of issuance:

DTE 15-1 Refer to the Company's response to information request DTE 1-19. Please provide the accounting for the retirements of Metscan meter reading equipment which occurred in the years 1997 and 2000.

DTE 15-2 Refer to Exhibit BSG/SHB-3. Has the Department approved the Service Agreement between NiSource Corporate Services Company and Bay State Gas Company, dated March 31, 2005 (see G.L. c. 164, § 94B)? If yes, please provide a copy of the Order approving the Agreement. If no, please explain.

DTE 15-3 Refer to Exhibit BSG/SHB-4. Has the Department approved the Operational Services Agreement between Bay State Gas Company and Northern Utilities, Inc., dated January 1, 2003 (see G.L. c. 164, § 94B)? If yes, please provide a copy of the Order approving the Agreement. If no, please explain.

DTE 15-4 Please indicate what results from the Marginal Cost Study ("MCS") are being used in the Company's rate design process.

DTE 15-5 Please perform the following analysis:

(a) regress total distribution plant ($2004), using the GDP IPD as deflator, on design day demand following the expression:
RDP = constant + alpha*DDD^2 + beta*DDD where RDP is the ($2004) distribution plant; DDD is the design day demand;

(b) correct all the potential statistical problems the regression equation may have;
(c) derive the marginal cost estimate from the regression equation specified above (present both the average estimated marginal cost and the entire series with the marginal cost estimate for each year) and select the marginal cost estimate the Company would use (e.g., the estimate for 2004 or the average marginal cost);
(d) are there other variables that could be considered in the analysis? If so, please identify them, perform such analysis, and present the results.

DTE 15-6 Refer to the Company's response to DTE 2-1 and Exh. BSG/JLH-3, at 10, 12. The Company states that: "In assembling data for the current MCS, it was impossible to develop meaningful estimates of cost data prior to 1984". Please:

(a) indicate what type of cost data the Company refers to (e.g., main extension, upgrades, replacement);
(b) indicate why the Company has to estimate part of some of the historical cost data;
(c) explain why the Company could not estimate the cost data for the period 1976 to 1984 the same way it did for the period 1984-2004 to be able to have a longer time series data and comply with the Department' s directives;
(d) explain why the Company used 29 years worth of data (from 1976-2004) in the "Historical Investment" and "Trended Cost" approaches while the Company has only cost data estimates for the period 1984-2004.

DTE 15-7 Refer to Exh. BSG/JLH-3, at Schedule JLH-3-2. Please:

(a) explain how the Company estimated the "Correction factor for Replacements";
(b) explain whether it would be possible to forecast the "correction factor for replacements" for the next 10 years, starting 2005. Indicate whether there is a way to measure the predictive ability of that forecast.

DTE 15-8 Refer to the Company's response to DTE 2-1. Please explain why the Company believes that the Department's directive do not apply, in this case, to the estimation of the marginal cost of "upgrades".

DTE 15-9 Refer to Exh. BSG/JLH-3, at Schedule JLH-3-2, at p. 3.

(a) Please explain all the implicit (related to the Stoner Model) and explicit (made by the Company) assumptions to the forecast of "reinforcement

Cost"
(b) provide a measure of forecasting ability;
(c) explain the differences between "marginal cost" and "incremental average cost". Are those the same? Please explain.

DTE 15-10 Refer to the Company's response to DTE 2-1. The Company states that it performed an econometric analysis of total distribution capacity-related costs. Eventually, the Company did not select any of these regression equations. Please:

(a) summarize and list the different specifications the Company has attempted and identify the variables included in each specification and the functional form used in each specification;
(b) indicate the reason as to why the Company did not select each of the specifications

DTE 15-11 Refer to Exh. BSG/JAF-1, Sch. BSG/BSG/JAF-3-1 (M.D.T.E. No. 35, at 3-1). Please state the differences between the Handy-Whitman index and the GDP-IPD when being used as deflator of a cost variable.

DTE 15-12 Please graph total distribution plant (in $2004) (y-axis) versus time (1976-2004) (x-axis).

DTE 15-13 Please graph total distribution plant (in $2004) versus design day demand (x-axis), covering the period 1976-2004.

DTE 15-14 Refer to Exh. BSG/JLH-3, at Schedule 3-5, at 1. The Company assumed a marginal cost of $10.57. Please present the regression equation and a summary of the main statistics supporting this results.

DTE 15-15 Please indicate whether the Company regressed average cost on time to estimate the marginal capacity-related O&M expenses.

DTE 15-16 Refer to the Company's response to DTE 2-3. The Company presented (see attachment 1) the attempted specifications with multiple independent variables and different functional forms. Please:

(a) summarize and list the different specifications the Company has attempted and identify the variables included in each specification and the functional form used in each specification;
(b) indicate the reason why the Company did not select each of the specifications.

DTE 15-17 Refer to Exh. BSG/JLH-3, at 13. The Company states that maintenance costs are generally declining on a real basis due to the reduced maintenance costs associated with plastic pipe, as more and more cast iron and bare steel pipe is replaced. Please:

(a) graph real O&M expenses (y-axis) and design day sendout (x-axis). By looking at the graph, does the Company believe that design day sendout is the main driver of the O&M distribution expenses?
(b) state how the Company tried to model and represent replacement of cast iron and bare steel pipe by plastic pipe.

DTE 15-18 Refer to BSG/SHB-1, at 26-27. Please indicate the specific steps or initiatives that the Company will take under its strategic plan going forward to reduce or contain costs, increase efficiency, and/or promote innovation. Breakdown the steps or initiatives into (i) short-term strategies, (ii) medium-term strategies, and (iii) long-term strategies.

DTE 15-19 Refer to the Company's response to the Department's information request DTE 4-1. Please:

(a) discuss the differences, if any, in the definition and measurement of O&M expenses between the Boston Gas cost trend analysis in D.T.E. 03-40 and the Bay State cost trend analysis in the instant proceeding.
(b) discuss the comparability of the results of the two studies given any differences in the definition and measurement of O&M expenses between the two studies;
(c) explain why the Company eliminated pensions, transmission and storage O&M expenses from the Bay State econometric cost study when these costs were included in the Boston Gas econometric cost study in D.T.E. 03-40;
(d) explain why the Company did not include a "rate-freeze dummy" in the Bay State econometric cost model to estimate the independent effect of the rate-freeze on the Company's O&M costs similar to the "PBR dummy" in the Boston Gas econometric cost model.

DTE 15-20 Refer to the Company's response to the Department's information request DTE-4-2. Please:

(a) discuss whether the inclusion of the "system age" proxy in Bay State's econometric cost study (with total costs as the dependent variable) would

have addressed the Department's concerns with capital "vintaging" in D.T.E. 03-40;

(b) indicate how the Company captured efficiencies from economies of scale while not including capital cost in the econometric study.

DTE 15-21 Refer to the Company's response to the Department's information request DTE 4-5. The Company stated that an econometric specification that included a separate time trend variable for Bay State Gas for the rate freeze years was first included and that the variable was eventually excluded because its coefficient was found statistically insignificant. Please:

(a) indicate why the Company tried to capture the effects of Bay State' rate freeze using a trend variable instead of a dummy variable;

(b) discuss the implication of finding the coefficient of the trend variable not statistically significant; could the Company conclude that the rate freeze period did not have a significant impact on the Company's O&M cost?

DTE 15-22 Refer to the Company's response to the Department's information request DTE 4-9. Please explain why the Company assumed that the error term has a t-distribution and not a normal distribution. Please discuss any differences, in terms of hypothesis testing found in assuming a t-student distribution and not a normal distribution for the error term.

DTE 15-23 Refer to the Company's response to the Department's information request DTE 4-7. Please explain how the "system age" variable is a proxy for the fixed capital stock.

DTE 15-24 Refer to the Company's response to the Department's information request DTE 4-19:

(a) if the "the cost efficiency measure varies by firm *i* but not by time *t*" what is the rationale for proposing an index-based PBR plan for Bay State in the instant proceeding? Please explain how realistic is to assume that Bay State's efficiency with respect to the average has not changed over time;

(b) the Company stated that the pure random element of the composed error term is zero on average. In addition, the Company stated that the mean of the fitted residual is zero (see the Company's response to DTE 4-9). Please discuss the implication of these two assumptions on the expression depicted in the Department's information request DTE 4-19 (a). Would it be fair to assume that, on average $\text{lnefficieny}^{i} = \text{lnefficiency}^{average}$? Please explain why yes or why not.

DTE 15-25 Refer to the Company's response to the Department's information request DTE 4-27. The Company states that "[t]his evidence further supports the conclusion that Bay State became very efficient under its previous PBR plan, so its consumer dividend should be no greater than the 0.3% approved for Boston Gas." Please provide the basis for the Company's conclusion given that the econometric cost study did not include a dummy variable to estimate the independent effect of the rate-freeze on Bay State's costs during the study period.

DTE 15-26 Refer to the Company's response to the Department's information request DTE4-38. Please discuss whether Boston Gas was operating under any type of incentive regulation or rate freeze plan prior to its initial rate-indexing PBR plan in D.P.U.96-50.

DTE 15-27 Refer to the Company's response to the Department's information request DTE4-55. Please:

(a) discuss how the "system age" proxy "satisfies this condition", and how the Company has "controlled, to the greatest practical extent, for mergers and acquisitions over the sample period";
(b) provide any published articles or book chapters that discuss the effect of including a poor proxy variable on the parameter estimates in a regression model.

DTE 15-28 Refer to Exh. BSG/JAF-2, Sch. JAF 2-1, at 4, lines 62-63. Explain the derivation of the Winter and Summer "Customer Revenue" for the Special Contract customers.

DTE 15-29 Refer to Exh. BSG/JAF-2, Sch. JAF 2-1, at 4, lines 65-66. Explain the derivation of the Winter and Summer "Volumetric Revenue - First Block" for the Special Contract customers.

DTE 15-30 Refer to Exh. BSG/JAF-2, Sch. JAF 2-1, at 4, lines 71-72. Should the notes on lines 71 and 72 read "line 10 * line 56" and "line 11 * line 57", respectively?

DTE 15-31 Refer to Exh. BSG/JAF-2, Sch. JAF 2-1, at 4, lines 78-87. Please provide the source or derivation of the "Test Year Revenues Other Than Base" values found on these lines.

DTE 15-32 Refer to Exh. BSG/JAF-2, Sch. JAF 2-1, at 4, line 95. Please explain the derivation of the average rate values for the C&I (42), C&I (52), C&I (43) and C&I (53) rate classes. Explain if the derivation of these numbers varies from

the formula listed in the "Notes" column of this line and if the derivation of these numbers varies from the derivation of the numbers for the same rate classes on line 94.

DTE 15-33 Refer to Exh. BSG/JAF-2, Sch. JAF 2-1, at 5-6, lines 141-142. Please provide the source or derivation of the values on these lines.

DTE 15-34 Refer to Exh. BSG/JAF-2, Sch. JAF 2-1, at 5-6, lines 146-147. Please provide the source or derivation of the values on these lines.

DTE 15-35 Refer to Exh. BSG/JAF-2, Sch. JAF 2-1, at 5-6, lines 151-152. Please provide the source or derivation of the values on these lines.

DTE 15-36 Refer to Exh. BSG/JAF-2, Sch. JAF 2-1, at 11, line 276. Please explain why there is no number in the "Outdoor Lighting" column on this line.

DTE 15-37 Refer to Exh. BSG/JAF-2, Sch. JAF 2-1, at 11, line 283-284. Please explain how these values are calculated for the "Outdoor Lighting" column of these lines.

DTE 15-38 Refer to Exh. BSG/JAF-2, Sch. JAF 2-1, at 11, line 298. Please explain how the derivation of the values for the "Residential Heating Total" and "Residential Non-Heating Total" columns on this line. The values in these cells do not appear to agree with the equation in the "Notes" column of this line.

DTE 15-39 Refer to Exh. BSG/JAF-2, Sch. JAF 2-1, at 11, line 297-298. Please explain the derivation of the values for the "C&I (40) Low Annual High Winter" and "C&I (50) Low Annual Low Winter" columns on these lines. The values in these cells do not appear to agree with the equation in the "Notes" column of these lines.

DTE 15-40 Refer to Exh. BSG/JAF-2, Sch. JAF 2-1, at 12, line 297-298. Please explain the derivation of the values for the "C&I (43) E15. High Annual High Winter" column on these lines. The values in these cells do not appear to agree with the equation in the "Notes" column of these lines.

DTE 15-41 Refer to Exh. BSG/JAF-2, Sch. JAF 2-1, at 11, line 311-312. Please explain how the derivation of the values for the "Residential Heating Total" and "Residential Non-Heating Total" columns on these lines. The values in these cells do not appear to agree with the equation in the "Notes" column of these lines.

DTE 15-42 Refer to Exh. BSG/JAF-2, Sch. JAF 2-1, at 12, line 319-320. Please explain the derivation of the values for the "C&I (43) E15. High Annual High Winter" column on these lines. The values in these cells do not appear to agree with the equation in the "Notes" column of these lines.

DTE 15-43 Refer to Exh. BSG/JAF-2, Sch. JAF 2-1, at 14, lines 361, 366 and 371. Please explain the derivation of the values in the "C&I (43) E15. High Annual High Winter" and "C&I (53) E15. High Annual Low Winter" columns on these lines. The values in these cells do not appear to agree with the equation in the "Notes" column of these lines.

DTE 15-44 Refer to Exh. BSG/JAF-2, Sch. JAF 2-1, at 13, line 375. Please explain how the values from line 349 are allocated between the "Residential Heating R&T-3" column and the "Residential Heating (4) Low-income" column.

DTE 15-45 Refer to Exh. BSG/JAF-2, Sch. JAF 2-1, at 13, line 375. Please explain how the values from line 349 are allocated between the "Residential Non-Heating R&T-1" column and the "Residential Heat (2) Low-income" column.

DTE 15-46 Refer to Exh. BSG/JAF-2, Sch. JAF 2-1, at 15, lines 380, 382 and 385. Please provide the source or explain the derivation of the values in the "Residential Heating (4) Low-income" and "Residential Heat (2) Low-income" columns.

DTE 15-47 Refer to Exh. BSG/JAF-2, Sch. JAF 2-1, at 15, lines 380. Please provide the source or explain the derivation of the values in the "Outdoor Lighting" column.

DTE 15-48 Please provide the number of customers served under the Company's residential low-income tariffs (R/T-2 and R/T-4) by month for the last three years.

DTE 15-49 Please describe the Company's policy regarding the enrollment of low-income customers.

DTE 15-50 Does the Company de-certify low-income customers and make these customers re-apply as low-income customers every year? If so, please explain the origin of this policy. In addition, if low-income customers are de-certified, please explain how customers are billed during the time they are de-certified, after being re-certified as low-income customers.

DTE 15-51 When a new low-income customer applies for the low-income rates is s/he billed as a low-income customer retroactive to the date of application, or to the date that the low-income application is approved by the Company?

DTE 15-52 Refer to Exh. BSG/JES-1, Sch. JES-6, at 8. Please provide the current percentage of the $1,658,500 that remains estimated.

DTE 15-53 Refer to Exh. BSG/JES-1, Sch. JES-6, at 8. Please provide greater detail including working papers pertaining to the $300,000 listed on Line 6 for "Steel Infrastructure Replacement Program Support."

DTE 15-54 Refer to Exh. BSG/JES-1, Sch. JES-6, at 8. Please provide greater detail including work papers pertaining to the $83,500 listed on Line 9 for "Other Professional Services."

DTE 15-55 Refer to Exh. BSG/JES-1, at 23-24. Please provide all documents, circulars, or RFPs for the competitive bidding process used for all outside services solicited with respect to the conduct of the rate case.

DTE 15-56 Refer to Exh. BSG/JES-1, at 23-24. Please indicate those outside services associated with the rate case that were not competitively bid.

DTE 15-57 Refer to Exh. BSG/JES-1, Sch. JES-6, at 8. Please provide invoices for every expense that has been incurred to date. As part of this response, please provide a schedule showing expense totals to date for each of the categories used in Exh. BSG/JES-1, Sch. JES-6, at 8.

DTE 15-58 Please provide updated invoices and rate case expense updates, labeled by the categories provided in Exh. BSG/JES-1, Sch. JES-6, at 8, on the basis of every two weeks for the duration of this proceeding. This is an ongoing information request.

DATED: June 16, 2005